

CLAIMS

I claim:

1. An apparatus comprising
a commercial transition modification device that replaces a plurality of commercial transitions in a video signal with a plurality of modified commercial transitions to form a modified video signal.
2. The apparatus of claim 1 further comprising
a commercial transition localization device that identifies the plurality of commercial transitions in the video signal and supplies data identifying the plurality of commercial transitions to the commercial transition modification device.
3. The apparatus of claim 1
wherein the plurality of commercial transitions includes transitions between commercial content portions of the video signal.
4. The apparatus of claim 1
wherein the plurality of commercial transitions include transitions between commercial content portions and non-commercial content portions of the video signal.
5. The apparatus of claim 1
wherein the plurality of modified commercial transitions cannot be detected by automated commercial detection.
6. The apparatus of claim 1 wherein
each of the plurality of commercial transitions of the video signal is comprised of a blank video frame; and
the commercial transition modification device removes a blank video frame from each of the plurality of commercial transitions to form the modified video signal.

7. The apparatus of claim 6 wherein

the commercial transition modification device removes a blank video frame from each of the plurality of commercial transitions and inserts a non-blank video frame into each of the plurality of commercial transitions.

8. The apparatus of claim 1 wherein

each of the plurality of commercial transitions of the video signal include a dark video frame; and

the commercial transition modification device removes a dark video frame from each of the plurality of commercial transitions to form the modified video signal.

9. The apparatus of claim 8 wherein

the commercial transition modification device removes a dark video frame from each of the plurality of commercial transitions and inserts a non-dark video frame into each of the plurality of commercial transitions.

10. The apparatus of claim 1 wherein

each of the plurality of modified commercial transitions corresponds to one of the plurality of commercial transitions;

each of the plurality of commercial transitions contains a set of a first number of video frames;

each of the plurality of modified commercial transitions contains a set of the first number of video frames .

11. The apparatus of claim 1 wherein

each of the plurality of modified commercial transitions corresponds to one of the plurality of commercial transitions;

each of the plurality of commercial transitions contains a set of a first number of video frames;

each of the plurality of modified commercial transitions contains a set of a second number of video frames;

wherein the first number and the second number are different.

12. The apparatus of claim 1 further wherein
each of the plurality of modified commercial transitions is comprised of
a content-dependent transition video frame.
13. The apparatus of claim 12 wherein
each of the content-dependent transition video frames are generated by using video
frames that are not blank or dark and are located immediately before and after a
commercial transition.
14. The apparatus of claim 1 wherein
each of the plurality of modified commercial transitions is comprised of
a semi-content-dependent transition video frame.
15. The apparatus of claim 14 wherein
each semi-content-dependent transition video frame is generated by using video
frames that are not blank or dark and located immediately before and after a commercial
transition.
16. The apparatus of claim 15 wherein
each semi-content-dependent transition video frame offers a transition from a video
scene before a commercial transition through a foreign video scene that is in general not
related to a video scene before a commercial transition or a video scene after a
commercial transition and to the video scene after a commercial transition; and wherein
the said foreign video scene is in general not blank or dark.
17. The apparatus of claim 1 further wherein
each of the plurality of modified commercial transitions are comprised of
a content-independent transition video frame that is not blank or dark.
18. The apparatus of claim 17 wherein
each of the plurality of modified commercial transitions are independent
from the video frames immediately before and after a commercial transition.

19. A method comprising
replacing a plurality of commercial transitions in a video signal with a plurality of modified commercial transitions to form a modified video signal.
20. The method of claim 19 further comprising
identifying the plurality of commercial transitions in the video signal.
21. The method of claim 19 wherein
the plurality of commercial transitions includes transitions between commercial content portions of the video signal.
22. The method of claim 19 wherein
the plurality of commercial transitions include transitions between commercial content portions and non-commercial content portions of the video signal.
23. The method of claim 19 wherein
the plurality of modified commercial transitions cannot be detected by automated commercial detection.
24. The method of claim 19 wherein
each of the plurality of commercial transitions of the video signal is comprised of a blank video frame; and further comprising
removing a blank video frame from each of the plurality of commercial transitions to form the modified video signal.
25. The method of claim 24 further comprising
inserting a non-blank video frame into each of the plurality of commercial transitions.
26. The method of claim 19 wherein
each of the plurality of commercial transitions of the video signal include a dark video frame; and further comprising
removing a dark video frame from each of the plurality of commercial transitions to form the modified video signal.

27. The method of claim 26 wherein
inserting a non-dark video frame into each of the plurality of commercial transitions.
28. The method of claim 19 wherein
each of the plurality of modified commercial transitions corresponds to one of the plurality of commercial transitions;
each of the plurality of commercial transitions contains a set of a first number of video frames;
each of the plurality of modified commercial transitions contains a set of the first number of video frames .
29. The method of claim 19 wherein
each of the plurality of modified commercial transitions corresponds to one of the plurality of commercial transitions;
each of the plurality of commercial transitions contains a set of a first number of video frames;
each of the plurality of modified commercial transitions contains a set of a second number of video frames;
wherein the first number and the second number are different.
30. The method of claim 19 wherein
each of the plurality of modified commercial transitions is comprised of a content-dependent transition video frame.
31. The method of claim 30 wherein
each of the content-dependent transition video frames are generated by using video frames that are not blank or dark and are located immediately before and after a commercial transition.
32. The method of claim 19 wherein
each of the plurality of modified commercial transitions is comprised of a semi-content-dependent transition video frame.

33. The method of claim 32 wherein

each semi-content-dependent transition video frame is generated by using video frames that are not blank or dark and located immediately before and after a commercial transition.

34. The method of claim 33 wherein

each semi-content-dependent transition video frame offers a transition from a video scene before a commercial transition through a foreign video scene that is in general not related to a video scene before a commercial transition or a video scene after a commercial transition and to the video scene after a commercial transition; and wherein the said foreign video scene is in general not blank or dark.

35. The method of claim 19 wherein

each of the plurality of modified commercial transitions are comprised of a content-independent transition video frame that is not blank or dark.

36. The method of claim 35 wherein

each of the plurality of modified commercial transitions are independent from the video frames immediately before and after a commercial transition.

37. The apparatus of claim 1 further comprising

a targeted automated commercial detection device that tests if a first modified commercial transition of the plurality of modified commercial transitions is undetectable

38. The apparatus of claim 37 wherein

the targeted automated commercial detection device tests if all of the modified commercial transitions in the plurality of modified commercial transitions are undetectable.

39. The method of claim 19 and further comprising

determining if a first modified commercial transition of the plurality of modified commercial transitions is undetectable for a given plurality of automated commercial detection and elimination systems.

40 The method of claim 39 further comprising

determining if all of the modified commercial transitions in the plurality of modified commercial transitions are undetectable for a given plurality of automated commercial detection and elimination systems.

41. A method comprising the steps of

selecting a first set of parameters;

using the first set of parameters to form a first modified video signal comprised of a first modified commercial transition, said first modified video signal derived from a video signal comprised of a commercial transition;

determining if a commercial detection device can detect the first modified commercial transition; and

if the commercial detection device can detect the first modified commercial transition, selecting a second set of parameters and using the second set of parameters to form a second modified video signal comprised of a second modified commercial transition, said second modified video signal derived from the video signal comprised of the commercial transition.

42. The method of claim 41 wherein

the steps of

selecting a set of parameters;

using the set of parameters to form a modified video signal comprised of a modified commercial transition, said modified video signal derived from the video signal comprised of the commercial transition;

and determining if a commercial detection device can detect a modified commercial transition;

are repeated for a plurality of sets of parameters, a plurality of modified commercial transitions, and a plurality of modified video signals, until the commercial detection device can not detect a modified commercial transition.

43 The method of claim 42 wherein

when the commercial detection device can not detect a modified commercial transition, the set of parameters used to form the modified commercial transition which could not be detected, are stored in a computer memory.

44. An apparatus comprising

a commercial detection device;

a transition mode control device;

wherein the transition mode control device selects a first set of parameters which are used to form a first modified video signal comprised of a first modified commercial transition, said first modified video signal derived from a video signal comprised of a commercial transition;

wherein the commercial detection device determines if it can detect the first modified commercial transition; and

if the commercial detection device can detect the first modified commercial transition, the transition mode control device selects a second set of parameters and uses the second set of parameters to form a second modified video signal comprised of a second modified commercial transition, said second modified video signal derived from the video signal comprised of the commercial transition.

45. The apparatus of claim 44 wherein

the transition mode control device repeats the steps of selecting a set of parameters, using the set of parameters to form a modified video signal comprised of a modified commercial transition, said modified video signal derived from the video signal comprised of the commercial transition;.

and the commercial detection device repeats the step of determining if a commercial detection device can detect a modified commercial transition;

for a plurality of sets of parameters, a plurality of modified commercial transitions, and a plurality of modified video signals, until the commercial detection device can not detect a modified commercial transition.

46 The apparatus of claim 45 further comprised of

a computer memory;

and wherein when the commercial detection device can not detect a modified commercial transition, the set of parameters used to form the modified commercial transition which could not be detected, are stored in the computer memory.